EK-8600I-S1-001

VAX 8600 System Upgrade Procedure

Prepared by Educational Services
of
Digital Equipment Corporation

1st Edition, May 1986

The material in this manual is for informational purposes and is subject to change without notice.

Digital Equipment Corporation assumes no responsibility for any errors that may appear in this manual.

Printed in U.S.A.

The manuscript for this book was created on a VAX-11/780 system running WPS-PLUS. The book was produced by Educational Services Development and Publishing in Marlboro, MA.

The following are trademarks of Digital Equipment Corporation:

digital™	PDP	UNIBUS
DEC	P/OS	VAX
DECmate	Professional	VMS
DECUS	Rainbow	VT
DECwriter	RSTS	Work Processor
DIBOL	RSX	
MASSBUS	RT	

CONTENTS

FIGURES

TABLES

PREFACE

This document is intended to be used by Digital Field Service personnel to upgrade the VAX 8600 system to a VAX 8650 system. This procedure, together with the VAX 8600/8650 System Installation Manual (EK-8600I-IN) provides enough information to install a VAX 8650 system.

The procedure is set up such that it is assumed the Field Service Engineer has been trained and has had some experience maintaining and repairing VAX 8600 systems.

The procedure is not complex. However, the VAX 8600/8650 System Installation Manual can be used as a reference as required.

UPGRADE OVERVIEW

The materials required to upgrade a VAX 8600 kernel to a VAX 8650 kernel varies, depending on the revision of the system. Field Service performs a system audit before the appropriate upgrade kit is ordered.

There are three parts to upgrading a VAX 8600 kernel to a VAX 8650 kernel.

1. VAX 8600 system audit by Field Service
2. Installation of VAX 8650-specific hardware/software
3. Removal of old materials from customer site

The Sales Account Representative informs Field Service that a system audit is required for the customer's system. (See the Order Request Form). Field Service then goes to the customer site to obtain the necessary system audit information. At the same time, Field Service starts to monitor the VAX 8600 system for reliable operation. Performing this reliability check prior to doing the upgrade is important to determine if there are any logic problems with the VAX 8600 which could cause problems for the newly upgraded VAX 8650 system. If the VAX 8600 system is not reliable at the time of the system audit, Field Service should use the Quality Improvement Program procedures to improve the system performance.

Following the audit, Field Service notifies the Sales Account Representative that the required Upgrade Kit (Digital part numbers 861UP-AA and 861UP-BA, if required) plus the appropriate number of Memory Array Modules (MS86-AA) need to be ordered. The customer informs Field Service when the Upgrade Kits are received. Field Service then schedules the installation to upgrade the system. A thorough system checkout completes the installation of the VAX 8650 Upgrade Kit. Finally, Field Service packs up the old material and removes it from the customer's site.

SYSTEM AUDIT AND RELIABILITY

The system audit determines the revision level of the VAX 8600 kernel, the current version of VAX/VMS or ULTRIX software used on the system, and the revision level of the VAXcluster. These revision levels then determine which modules will be replaced. Table 1 lists all the VAX 8600 modules that might have to be replaced for the upgrade.

All L0200 memory array modules (below revision D1) must be replaced with a new, faster L0200 module (at revision D1) or an L0226 version. For each L0200 module (below revision D1) that must be replaced, an MS86-AA module must be ordered.

Table 1 VAX 8600/8650 Replacement Modules

VAX 8600 Module Type	VAX 8650 Module Type	Min Rev for VAX 8650	Name	Slot
L0200	L0200	D1	4 MByte Memory Arrays	**
L0225	L0225	A1	16 MByte Memory Arrays	**
L0226	L0226	A1	4 MByte Memory Arrays	**
L0204	L0204	F1	MBox Data Path (MCD)	16
L0205	L0205	E1	Mem Addr Phys (MAP)	17
L0206	L0206	H1	IBox Data Path (IDP)	14
L0211	L0211	E1	EBox Data (EBD)	06
L0212	L0212	H1	FBox Adder* (FBA)	08
L0217	L0231	B1	Clock (CLK)	11
L0220	L0230	A1	MBox Cache Control (MCC)	18

* installed if FBox option is present
** dependent on the system configuration, can be L0200 and L0225 or L0226

Using the system audit worksheet, do the following.

1. If the customer's application software is running, inform the customer that the system will be used to obtain system audit information. This should not affect the customer's application software. However, if the customer is running a critical software application, it might be advisable to stop running it before obtaining the system audit information.

2. Under VAX/VMS, use the SHOW SYSTEM command at a customer's system terminal.* Check the beginning of the first line which states the current version of VAX/VMS run on the system. Enter this information on the Audit Worksheet.

   NOTE
   The minimum required version of VAX/VMS to support the VAX 8650 is version 4.3 (version 1.2 for ULTRIX). Check that VAX/VMS version 4.3 (version 1.2 for ULTRIX) will be installed on the system before or at the time of the upgrade.

   For operating systems other than VAX/VMS, check that the version used supports VAX 8650 operations.

* The ULTRIX login prompt reports the version of the ULTRIX operating system that is run.

3. If the customer's version of VAX/VMS is below version 4.3, or below version 1.2 for ULTRIX, inform the Sales Account Representative. The VAX 8600 system cannot be upgraded until this VAX/VMS or ULTRIX update takes place.

4. Use the SHOW CLUSTER/CONTINUOUS command to check all systems in the VAXcluster. The column titled SOFTWARE lists the software revision of all VAX systems and HSC50s in the VAXcluster. Enter VAXcluster revision information on the Audit Worksheet.

5. Use the ADD RP_REV command to obtain the hardware revision of the CI interface RAMs in use and the version of the CI microcode used. The column titled RP_REVIS shows values like "50003" for VAX processor nodes in the VAXcluster. The first digit indicates the version of the microcode (in this example, 5). Enter this information on the Audit Worksheet. The last four digits show the revision of the hardware RAMs (in this example, 003).

The above information, plus the latest copy of the Cluster Revision Control Document is sufficent to determine if additional hardware or software is needed to upgrade the systems in the VAXcluster to the proper revision.

NOTE

All nodes in the VAXcluster must be at acceptable software and hardware revisions before the VAX 8650 Upgrade Kit can be installed. Acceptable revisions are outlined in the Cluster Revision Control Document.

Any hardware or software updating should be done prior to or at the time of the VAX 8650 Upgrade Kit installation.

6. Open the VAX 8600 system front doors. Enter the module revision levels of all the modules on the Audit Worksheet.

NOTE

The 861UP-AA kit (L0230 and L0231) is mandatory for the upgrade. The 861UP-BA kit is ordered only if any of the L0204, L0205, L0206, L0211, or L0212 modules is below minimum revision for the VAX 8650.

All modules that are below the lowest revision level stated on the Audit Worksheet do not qualify for a credit if replaced. This will result in higher costs for per-call customers. Field Service will usually replace these modules with newer revision modules. Costs are charged to the per-call customers, but customers with maintenance agreements will not be charged.

7. Count the number of L0200 memory array modules below revision D1 (MS86-BA) installed in the VAX 8600 system. Enter this information on the Audit Worksheet.

NOTE

A MS86-AA (L0226) module must be ordered for each L0200 module that is replaced.

8. Discuss system reliability with the customer, especially intermittent system crashes and unexplained problems that are not yet resolved. State these findings on the Audit Worksheet.

If the system is unreliable (more than one unresolved system crash per month over the last three months), get the system checked out according to the Quality Improvement Program procedures.

NOTE

Quality Improvement Program procedures should be used on all unstable VAX 8600 systems.

9. Ask the customer to save all error log information until the upgrade is completed.

10. The Field Service Account Representative responsible for the system should start monitoring the system for any problems. For unresolved or intermittent problems, an action plan must be established to guarantee resolution of the problem at least three weeks prior to the installation of the Upgrade Kit.

11. Order any other modules that have to be replaced to reach the correct system revision. Order any other parts needed to bring other systems within the VAXcluster to the correct revision.

> NOTE
> The customer is charged for any modules to bring the VAX system to the correct revision (no charge if there is a maintenance agreement with Digital). This should have been discussed with the customer before ordering the modules.

12. Ask the customer to inform the local Field Service Branch (or Installation Branch) office when the Upgrade Kit arrives.

13. Fill out a LARS form. When Field Service visits the customer's site for a system audit, charge this time to LARS code "D".

14. Upon completion of the audit, forward signed copies of the Audit Worksheet to the Sales Account Representative. Have the Sales Account Representative order the required kits: 861UP-AA, 861UP-BA (if necessary), and the appropriate number of MS86-AAs (if necessary).

> NOTE
> The Sales Account Representative will include the Field Service installation charge as a separate item on the upgrade purchase quote given to the customer.

UPGRADE INSTALLATION PROCEDURE

The VAX 8600/8650 Upgrade Kits contain the items shown in Tables 2 and 3.

> NOTE
> The modules ordered (861UP-BA kit and MS86-AAs) as a result of the system audit must be available before the upgrade installation procedure can be started.
>
> VAX/VMS must be at a minimum version of 4.3 or ULTRIX must be at a minimum version of 1.2 to support the VAX 8650 system.

Table 2 VAX 8600/8650 Upgrade Kit Parts List

Part Number	Description	Quantity
L0230-00	MBox Cache Control Module (MCC)	1
L0231-00	Clock Module (CLK)	1
23-409E4-00	EPROM for Console Module	1
36-17674-00	Option ID Label	1
36-21483-01	8600/8650 MUL Label	1
36-22279-05	Control Panel Label	1
37-00898-01	Return Packaging Kit	1
BC-FG45B-ME*	8650 RL02 Pack (NO Diagnostics)	1
EK-8600I-S1	8600/8650 Upgrade Procedure	1
MP-01990-02	861UP Customer Print Set	1

* or latest available version

Table 3 861UP-BA Parts List

Part Number	Description	Quantity
L0204-00	MBox Cache Data Module (MCD)	1
L0205-00	MBox Address Path Module (MAP)	1
L0206-00	IBox Data Path Module (IDP)	1
L0211-00	EBox Control Module (EBD)	1
L0212-00	FBox Adder Module (FBA)	1
36-26123-01	Return to IMM Label	2
37-00836-01	Module Packaging	5
99-05116-01	Container	1
99-05729-00	Tape (Paper)	A/R
99-06200-01	Antistatic Cellular Film	A/R
99-06487-03	Tape (Polyester)	A/R

A/R = as required

NOTE

The 861UP-AA Upgrade Kit is used for each VAX 8600 being upgraded. The 861UP-BA Upgrade Kit is used only if any of the VAX 8600 modules is below the miminum revision level needed by the VAX 8650. Upgrades also involve the MS86-AA (L0226) if the MS86-BA (L0200) is below revision D1.

Either a VAX 8650 Console Disk Pack WITH Diagnostics (Digital part number BC-FG47B-DE or latest available version) or a VAX 8650 Console Diagnostic Tape (Digital part number BB-FG48B-DE or latest available version) is needed to complete the installation of the Upgrade Kit(s).

To upgrade the VAX 8600 system to a VAX 8650 system, do the following.

1. Inform the customer that the RL02 disk pack will be changed to an updated version to be used on the VAX 8650 system. Therefore, any customer-specific files on the RL02 disk pack must be saved by the customer.

2. Copy the DEFBOO.COM file from the VAX 8600 system RL02 disk pack to the VAX 8650 system RL02 disk pack. Refer to the VAX 8600 Software Installation Guide (which is in the VMS software distribution kit) for the procedure on how to copy files.

   NOTE
   Step 2 does not apply to ULTRIX operating systems.

3. Ask the customer to shut down the VAX/VMS or ULTRIX operating system.

4. Run one pass of each of the diagnostics in Table 4 to establish a known base before installing the Upgrade Kit.

5. Spin down the RL02 disk drive, and open the door. Install the disk pack that contains the VAX 8650 diagnostics.

6. Power down the VAX 8600 system.

Table 4 VAX 8600 Checkout Diagnostics

Diagnostic	Run By Typing
MHC Diagnostics and Micro Diagnostics	@TSTCPU
EVKAA	@MACAAC
Diagnostic Supervisor	@EDSAA
EVKAB	DS> RUN EVKAB (after DS>)
EVKAC	DS> RUN EVKAC (after DS>)
EVKAD	DS> RUN EVKAD (after DS>)
EVKAE	DS> RUN EVKAE (after DS>)
EVCBA	DS> RUN EVCBA (after DS>)
EVGAA	DS> RUN EVGAA (after DS>)
EVGAB	DS> RUN EVGAB (after DS>)

7. Open the front CPU cabinet doors and remove the L0201 CSL module from slot 02 in the CPU backpanel BP2. Be sure to observe proper grounding procedures to guard against electrostatic discharges by wearing a wrist strap when working with modules.

NOTE

If the L0201 module is at revision F1 or greater, go to step 10 since the EPROM (Digital part number 23-409E4-00) does not have to be replaced.

8. On the L0201 CSL module, remove the VAX 8600 EPROM (Digital part number 23-313E4-00) from the socket at E169. Refer to the L0201 CSL Unit Assembly Drawing and Figure 1.

9. Carefully install the VAX 8650 EPROM (Digital part number 23-409E4-00) into the socket at E169 (Step 8) noting the orientation of pin 1. Change the module revision as follows: E1 to F2, E2 to F3, or E3 to F1.

10. Reinstall the L0201 CSL module into slot 02 of the CPU backpanel BP2.

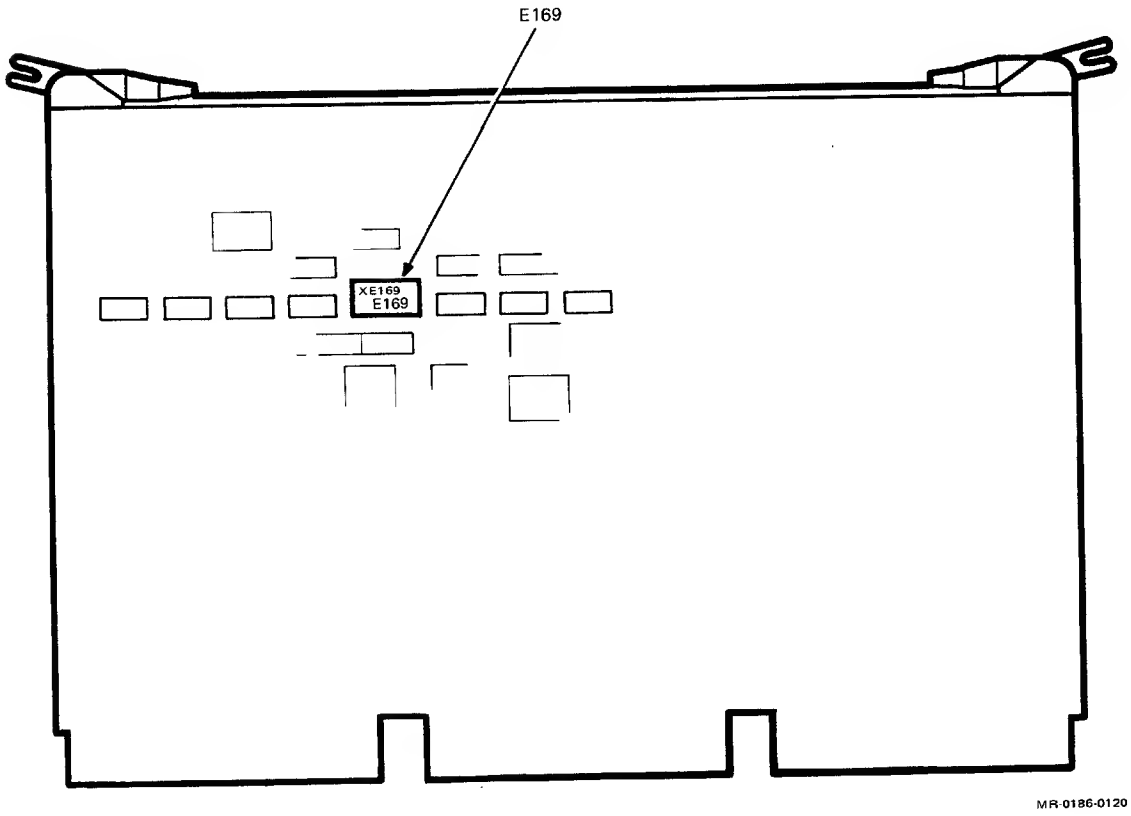

Figure 1 L0201 CSL Module

11. Depending on the system audit, all or some of the modules will have to be removed from the CPU backpanel BP2. As necessary, remove a VAX 8600 module from CPU backpanel BP2 and replace it with a VAX 8650 module as listed in Table 5.

12. Remove the L0200 (below revision D1) 4 Mbyte Memory Array modules and replace them with L0200 (revision D1) or L0226 4 Mbyte memory array modules, if required. The number of modules to be replaced was determined by the system audit.

NOTE

If memory is reconfigured, refer to Table 6 for L9200 configuration guidelines.

CAUTION

The L9200 module is designed to be a memory load module to load the appropriate regulator to its minimum specified load. It is to be used in VAX 8650 systems that have an insufficient number of memory modules for correct loading.

Table 5 VAX 8600/8650 Modules

VAX 8600 Module	VAX 8650 Module	Name	Slot
L0220	L0230	MBox Cache Control (MCC)	18
L0204*	L0204**	MBox Data Path (MCD)	16
L0205*	L0205**	Mem Addr Phys (MAP)	17
L0206*	L0206**	IBox Data Path (IDP)	14
L0217	L0231	Clock (CLK)	11
L0212*	L0212**	FBox Adder (FBA)	08
L0211*	L0211**	EBox Data (EBD)	06

* Removal dependent on revision
** Installation dependent on system audit

Table 6 L9200 Module Configurations

Memory Configurations for VAX 8600 and VAX 8650	L9200 in slot 5	L9200 in slot 8
All memory configurations that fill no more than the first four memory slots.	YES	YES
All memory configurations that fill the first five or the first six slots only.	NO	YES
Memory configurations consisting of L0200's and/or L0226's only and fills slots 1--7.	NO	YES
All other memory configurations.	NO	NO

13. Table 6 is used to determine how many L9200 modules must be installed with the existing memory configuration. Any changes in memory configuration from what was factory-installed must be done by Digital Equipment Corporation Field Service personnel only.

NOTE

For simplicity, memory slots should be filled from right to left, keeping the L0225 modules to the right of the L0226 modules. When a slot cannot accept a memory module due to a L0225 blocking the empty slot, this empty slot is considered full.

When the L9200 modules are not used, they should be safely stored for future use.

14. Beginning at the two key lock holes (right hand side), carefully align and place the new VAX 8650 control panel label (Digital part number 36-22279-05) over the existing VAX 8600 control panel label and continue to the left (Figure 2).

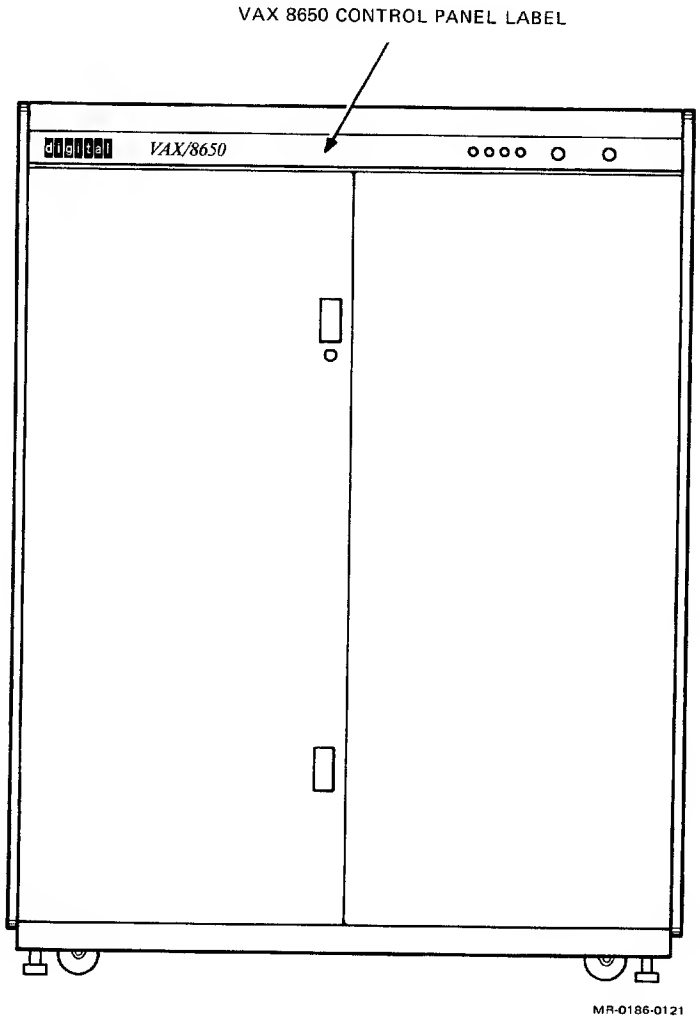

Figure 2 VAX 8650 Control Panel Label

15. Carefully align and place the new VAX 8600/8650 Module Utilization Label (MUL) (Digital part number 36-21483-01) over the existing VAX 8600 MUL label above the CPU module cooling doors (Figure 3).

16. Install the option ID label (Digital part number 36-17674-00) near the existing KA86 serial ID label on the upper rear rail of the CPU cabinet.

17. Locate connector J9 on the CPU backplane between slots 2 and 3 (center connector). The slide on jumpers determine the System Identification (SID) information.

    Change the jumpers on connector J9 as shown in Table 7 and Figure 4.

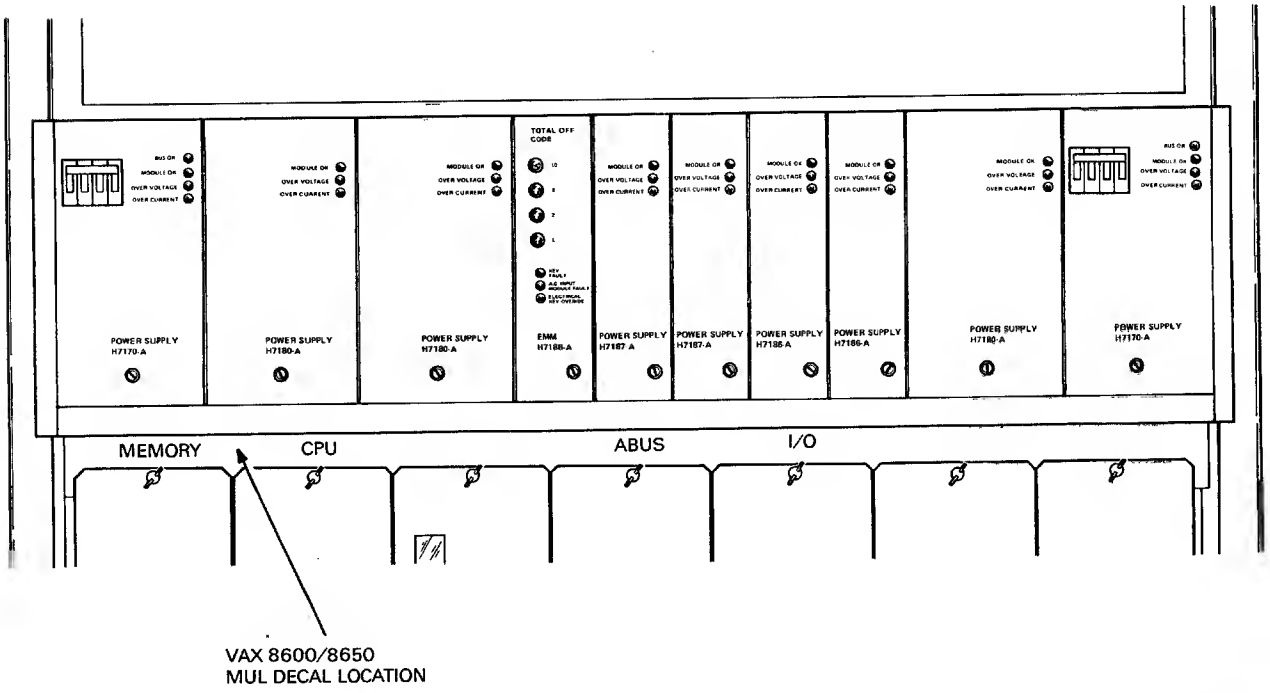

Figure 3 VAX 8650 MUL Label

Table 7 SID Jumpers

J9 Pins	SID Bit	Jumper (In/Out)	Value	Function
17--18	23	Out	1	"8" = 8650
19--20	22	In	0	
21--22	21	In	0	
23--24	20	In	0	
25--26	19	In	0	
27--28	18	In	0	
29--30	17	Out	1	"2" = Revision B
31--32	16	In	0	

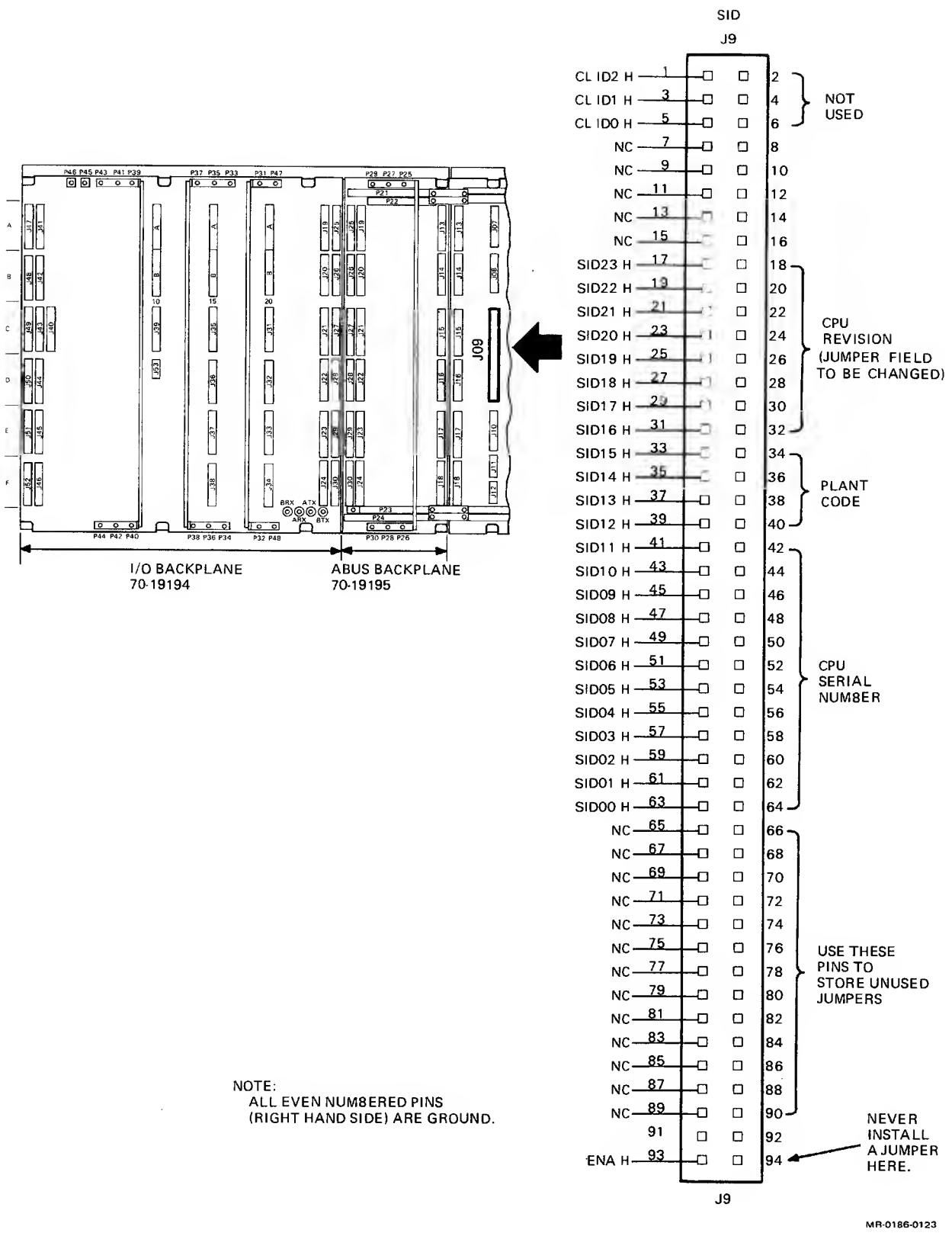

Figure 4 SID Jumper Locations

18. Power on the VAX 8650 system.

19. The SID register should now show "xx82xxxx" where "82" is a VAX 8650 system at revision B and the "x" bits match the previous VAX 8600 system SID data (serial number, Manufacturing Plant).

    At the macro hardcore prompt (>>>), use the EXAMINE SID command to check that the SID register number is correct.

    Example

    ```
    >>>EXAMINE SID

    4082F500      (a serial number such as the sample is
                  printed)
    ```

20. To set and check the clock frequency at 74 MHz, do the following.

    ```
    >>>SET CLOCK FREQUENCY X5
    >>>SHOW CLOCK
       FREQUENCY 74 Mhz, full rate, locked
       SYS_CLOCK running
       CPU_CLOCK running

       X1 = 40 Mhz
       X2 = 50 Mhz
       X3 = 68 Mhz
       X4 = 72 Mhz (Normal)
       X5 = 74 Mhz (High)
       X6 = 76 Mhz (Unsupported - manufacturing only)
    ```

    NOTE

    This frequency is for diagnostic purposes only. Customers running their VAX 8650 system at this high-margin frequency will not be supported by Digital Field Service.

    Run the diagnostics shown in Table 8 at the system high-margin speed of 74 MHz.

    Run any applicable diagnostics on untested hardware that is installed during the upgrade installation procedure.

Table 8 VAX 8650 Checkout Diagnostics

Diagnostic	Run By Typing
MHC Diagnostics and Micro Diagnostics	@TSTCPU
EVKAA	@MACAAC
Diagnostic Supervisor	@EDSAA
EVKAA	DS> RUN EVKAB (after DS>)
EVKAC	DS> RUN EVKAC (after DS>)
EVKAD	DS> RUN EVKAD (after DS>)
EVKAE	DS> RUN EVKAE (after DS>)
EVCBA	DS> RUN EVCBA (after DS>)
EVGAA	DS> RUN EVGAA (after DS>)
EVGAB	DS> RUN EVGAB (after DS>)

21. At the macro hardcore prompt, use the SET CLOCK and SHOW CLOCK commands to set and show the clock frequency to 72 Mhz for normal operation.

```
>>>SET CLOCK FREQUENCY X4
>>>SHOW CLOCK
   FREQUENCY 72 Mhz, full rate, locked
   SYS_CLOCK running
   CPU_CLOCK running

   X1 = 40 Mhz
   X2 = 50 Mhz
   X2 = 68 Mhz
   X4 = 72 Mhz (Normal)
   X5 = 74 Mhz (High)
   X6 = 76 Mhz (Unsupported - Manufacturing only)
```

22. Save the printout of the diagnostic tests at the customer site.

23. Have the customer update the VAX/VMS or ULTRIX operating system, if required.

24. If the customer has a maintenance agreement with Digital, copy the diagnostics onto the customer's RL02 disk pack. This requires placing these diagnostics onto the VAX 8650 system from either a tape drive or another RL02 disk pack, depending on what type of distribution media is used by the Field Service Branch office. Until the VAX 8650 console/diagnostic software is handled by SDC, each Field Service branch office doing VAX 8650 upgrades will receive and maintain a VAX 8650 system upgrade tape from Diagnostic Engineering in Marlboro.

25. Have the customer load and boot the VAX/VMS or ULTRIX operating system (refer to the VAX 8600 Software Installation Guide which is in the VMS software distribution kit).

26. Run one pass of UETP. Refer to the VAX/VMS UETP User's Guide (AA-D643C-TE) for details or one pass of the ULTRIX System Exerciser.

27. Have the customer run any or all application software for a quick VAX 8650 system checkout.

28. When completed, have the customer sign the LARS report.

DISPOSITION OF REPLACED VAX 8600 MODULES

All material removed from the customer's VAX 8600 system as part of the upgrade installation becomes the property of Digital Equipment Corporation.

Do the following to prepare the modules for return to the Idle Material Management (IMM) group.

1. Remove or make a copy of the Material Return Form. Complete it by filling in the serial numbers and module revisions for all modules to be returned.

NOTE

Do not send normal defective spares to the IMM group.

2. Observing proper grounding procedures, place the modules removed from the VAX 8600 in the packaging received with the new modules. The seven old CPU modules (L0200, L0204, L0205, L0206, L0211, L0212, and L0217) go in the black plastic module cases. The old L0200 memory array modules go in the cardboard containers received with the MS86-AAs.

3. Using the return container provided in the 861UP-AA kit, pack the L0217, L0220, and all L0200 memory array modules. Be sure an IMM return label (Digital part number 36-26123-01) provided in the kit is affixed to the outside of the return container.

4. Using the return container provided in the 861UP-BA kit, pack the five remaining CPU modules (L0204, L0205, L0206, L0211, and L0212). Locate the IMM return label (Digital part number 36-26123-01) provided in the 861UP-BA kit, and affix this label to the outside of the return container.

5. Make sure both the Field Service Engineer and customer have signed the Material Return Form. Enclose the form with the material being returned. Leave a copy with the customer as a receipt.

6. Remove all materials from the customer site, and return them to the local Branch office.

7. Contact the local Customer Administrative Services (CAS) representative for a Return Authorization (RA) number, and mark this number on the return containers. Have CAS arrange for pickup and return of the materials to the IMM group.

> NOTE
> When communicating with CAS, be aware of the special return part numbers (Table 9) that have been established to control this process. CAS needs to know the return part numbers only.
>
> CAS will not arrange for transportation of the materials from the customer site.

The return part numbers correspond to Upgrade Kit part numbers as shown in Table 9.

Table 9 Return Part Numbers

Upgrade Kit P/N	Return P/N
00-861UP-AA	00-861UR-AA
00-861UP-BA	00-861UR-BA
00-0MS86-BA (L0200)	B1-0MS86-BA

VAX 8600 to VAX 8650 UPGRADE SITE AUDIT REQUEST FORM

TO: FIELD SERVICE BRANCH

FROM: _____
(Sales Representative)

MAIL STOP/LOCATION: _____

DTN:

SUBJECT: VAX 8600 to VAX 8650 Upgrade Site Audit Request

CUSTOMER: _____

LOCATION: _____

CONTACT PERSON (to arrange audit): _____

TELEPHONE #: _____

EXISTING VAX 8600 CPU SERIAL NUMBER: _____
(submit one request form per VAX 8600 CPU to be upgraded)

AUDIT MUST BE COMPLETED NO LATER THAN: _____(date)

Prior to quotation of the VAX 8650 upgrade for the above noted customer, please perform a site audit to facilitate accurate quote and order information. Please indicate the required quantity, sign this form, and return it to me.

QTY	PART #	DESCRIPTION
1	861UP-AA	8600-8650 Upgrade
____ (0-1)	861UP-BA	8600-8650 Upgrade Service Kit
____ (1-8)	MS86-AA	4 MB Memory

_____
(Field Service Signature)

_____
(date audit completed)

VAX 8600 to VAX 8650 UPGRADE AUDIT WORKSHEET - PART I

Customer Name _____
Customer Address _____
System Serial Number _____

- Version of VMS or ULTRIX _____

- Cluster Revisions:

Node Number	Node Type VAX or HSC	Software Version	if VAX processor CI RAM	CI Microcode
*				

* upgraded system

- Is the VAX 8600 system at System revision E1 or greater? _____

If not, it might be necessary to upgrade other parts of the VAX 8600 system before installing the upgrade kit!

NOTE
If the installed module has a lower revision than the listed CS revision, then module costs will not be covered via the ARL.

- How many L0200 4MB Memory Array Modules below revision D1 are installed in the customer's system? _____

- Is the system performing reliably (consult also with customer)? _____

If not, Field Service should develop an action plan to increase the reliability of the VAX 8600 system before the upgrade kit is installed.

VAX 8600 to VAX 8650 UPGRADE AUDIT WORKSHEET - PART II

AUDIT WORKSHEET - PART II
MINIMUM REVISIONS FOR
VAX 8650 CPU MODULES

CUSTOMER NAME: _____
SYSTEM SERIAL NUMBER: _____

Part No.	Description		Slot NR	Minimum Module Revisions	Currently Installed Revision	New Module Required?	Order Kit Number
L0201-00	(CSL)	EBOX	2	E1 (FLD)/ F1 (MFG)			
L0215-00	(CSA)	EBOX	3	B2			
L0216-00	(CSB)	EBOX	4	B2			
L0210-00	(EBC)	EBOX	5	C3			
L0211-00	(EBD)	EBOX	6	E1			861UP-BA*
L0213-00	(FBM)	FBOX	7	C5			
L0218-00	(FJM)	FBOX SUB BOARD	7	A2			
L0212-00	(FBA)	FBOX	8	H1			861UP-BA*
L0223-00	(FTM)	FBOX SUB BOARD	8	A2			
L0219-00	(EBE)	EBOX	9	B2			
L0209-00	(EDP)	EBOX	10	C2			
L0214-00	(ICB)	IBOX	12	F4			
L0207-00	(ICA)	IBOX	13	H3			
L0206-00	(IDP)	IBOX	14	H1			861UP-BA*
L0208-00	(IBD)	IBOX	15	F5			
L0204-00	(MCD)	MBOX	16	F1			861UP-BA*
L0205-00	(MAP)	MBOX	17	E1			861UP-BA*
NEW VAX 8650 CPU MODULES							
L0230-00	(MCC)	MBOX	18	A1			
L0231-00	(CLK)	CLOCK	11	B1			
VAX 8650 MEMORY MODULES (MEMORY BACKPLANE)							
L0200-BA	4MB ARRAY (8 MAX)		1-8	D1			MS86-AA**
L0225-AA	16MB ARRAY (4 MAX)		1-8	A1			
L0226-BA	4MB ARRAY (8 MAX)		1-8	A1			

*An 861UP-BA kit contains the L0204, L0205, L0206, L0211, and L0212 modules.
**An MS86-AA must be ordered for each L0200-BA that must be replaced.

VAX 8600 to VAX 8650 UPGRADE KIT RETURN FORM

Customer Name: _____

System Serial Number: _____

VAX 8600 UPGRADE KIT
MATERIAL RETURN FORM
FOR REPLACED VAX 8600 MODULES

Part No.	Description	Serial Number	Module Revision	Comments
L0204-00	(MCD) MBOX			
L0205-00	(MAP) MBOX			
L0206-00	(IDP) IBOX			
L0211-00	(EBD) EBOX			
L0212-00	(FBA) FBOX			
L0217-00	(CLK) CLOCK			
L0220-00	(MCC) MBOX			
MEMORY MODULES				
L0200-BA	4MB ARRAY			
L0200-BA	4MB ARRAY			
L0200-BA	4MB ARRAY			
L0200-BA	4MB ARRAY			
L0200-BA	4MB ARRAY			
L0200-BA	4MB ARRAY			
L0200-BA	4MB ARRAY			
L0200-BA	4MB ARRAY			

Signatures Date

Customer _____ _____

FS Representative _____ _____